




BINGNAN LI

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EDUCATION & EXPERIENCES

Amazon Web Services

Applied Scientist Intern

July. 2025 – Present

Seattle, US

- **Project:** Dynamic Multi-Expert Logit Ensemble for LLM Reasoning

University of California, San Diego

M.S in Computer Science and Engineering

Sep. 2024 – Present

San Diego, US

- **GPA:** 3.91/4.00
- **Selected Courses:** Algorithm Design and Analysis I(A), Probabilistic Reason&Learning(A), Recommender Sys&Web Mining(A)

ShanghaiTech University

B.E in Computer Science and Technology

Sep. 2020 – Jul. 2024

Shanghai, China

- **GPA:** 3.87/4.00
- **Ranking:** 3/248
- **Selected Courses:** Artificial Intelligence I(A+), Computer Vision II(A+), Introduction to Machine Learning(A), Deep Learning(A)

PUBLICATIONS (* INDICATES EQUAL CONTRIBUTION)

DLLG: Dynamic Logit-Level Gating of LLM Experts

Bingnan Li, Zhaoyang Zhang, Xiaoze Liu, Yantao Shen, . . . , Zhuowen Tu, Stefano Soatto

Underreview

OverLayBench: A Benchmark for Layout-to-Image Generation with Dense Overlaps

Bingnan Li*, Chen-Yu Wang*, Haiyang Xu*, Xiang Zhang, Ethan Armand, . . . , Jianwen Xie, Zhuowen Tu

NeurIPS 2025 D&B Track

YOLO-Count: Differentiable Object Counting for Text-to-Image Generation

Guanning Zeng, Xiang Zhang, Zirui Wang, Haiyang Xu, Zeyuan Chen, **Bingnan Li**, Zhuowen Tu

ICCV 2025

Generalize or Detect? Towards Robust Semantic Segmentation Under Multiple Distribution Shifts

Zhitong Gao, **Bingnan Li**, Mathieu Salzmann, Xuming He

NeurIPS 2024

Gradient-Map-Guided Adaptive Domain Generalization for Cross Modality MRI Segmentation

Bingnan Li, Zhitong Gao, Xuming He

Machine Learning for Health (ML4H 2023)

RESEARCH EXPERIENCES

Dynamic Multi-Expert Logit Ensemble for LLM Reasoning (ongoing)

Supervisor: Zhaoyang Zhang, Yantao Shen, Zhuowen Tu

July. 2025 – Present

Seattle, US

- **Developed a multi-agent ensemble system** integrating several domain-specialized LLM experts with efficient parallel inference and logit-level fusion.

- **Investigated oracle ensemble upper bounds** to quantify theoretical performance limits and identify the potential gains beyond single-expert capability.
- **Explored multiple dynamic ensemble strategies**, including logit-level weight prediction, trajectory-level quality estimation, and rollout-based correctness scoring.
- **Demonstrated that dynamic ensembles outperform uniform ensembles** and show clear potential to surpass the best individual expert across reasoning tasks.

Overlap-Aware Layout-to-Image Generation: A New Task and Benchmark

Jan. 2025 – May. 2025

Supervisor: Zhuowen Tu

San Diego, US

- Investigated failure modes of Layout-to-Image models under **dense overlapping bounding boxes**.
- Proposed **OverLayScore**, a spatial-semantic metric to quantify overlap difficulty and analyze model degradation.
- Built **OverLayBench**, a curated benchmark with **balanced difficulty**, dense captions, relationships, and human-verified annotations.
- Developed **CreatiLayout-AM**, an overlap-aware model incorporating **amodal mask supervision** to improve occlusion handling.
- The relevant paper has been accepted by **NeurIPS2025 (D&B Track)**.

OoD Detection under Multiple Distribution shifts

Apr. 2024 – Aug. 2024

Supervisor: Xuming He, Mathieu Salzmann

Shanghai, China

- Proposed a method to help Out-of-Domain(OoD) detection model distinguish between **domain-level** and **semantic-level** distribution shifts.
- Developed an automatic data augmentation method that **simultaneously generates images with novel classes and domain shift** via ControlNet and SAM.
- Proposed a **multi-margin contrastive loss** to control the uncertainty score with finer granularity.
- The relevant paper has been accepted by **NeurIPS 2024**.

Single Domain Generalization in Medical Image Segmentation

Aug. 2022 – Nov. 2023

Supervisor: Xuming He

Shanghai, China

- Developed a novel domain generalization framework that enables model to better generalize between various Magnetic resonance image modalities.
- Utilized **gradient-map** as a domain-invariant representation to eliminate the global image style discrepancy while preserving the structural information shared among different MRI modalities.
- Proposed a **pseudo-label based test-time-adaptation** method to gradually refine the segmentation results on areas that been affected by lesion tissues.
- The relevant paper has been accepted by **ML4H 2023**.

ACTIVITIES & HONORS & AWARDS

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|---|------------|
| Outstanding Graduates of Shanghai (top 5%) | 2024 |
| Outstanding Student at ShanghaiTech University (top 3%) | 2021, 2023 |
| Merit Student at ShanghaiTech University (top 7%) | 2022 |

TECHNICAL SKILLS

Languages: Python, C, C++, Matlab, RISC-V

Developer Tools: JetBrains Pycharm, VS Code

Technologies/Frameworks: Linux, GPU Cluster, GitHub, PyTorch, Numpy, OpenCV